WHAT IS CLAIMED IS:

1. An apparatus for purifying an exhaust gas of an engine, said apparatus comprising:

a catalyst of a NOx absorbing-and-reducing type disposed in an exhaust passage, for absorbing a NOx component in the exhaust gas under an over-oxygen atmosphere and for reductively emitting the absorbed NOx component according to a reduction of an oxygen concentration;

a momentary NOx absorption amount estimation section for estimating a momentary amount of the NOx component absorbed in said catalyst on the basis of a unit time;

an integrated NOx absorption amount estimation section for estimating an integrated amount of the NOx component absorbed in said catalyst according to the integration of momentary amounts estimated by the estimation section;

a NOx emitting section for letting said catalyst to emit the NOx component when the integrated amount estimated by the estimation section is equal to or greater than a predetermined absorption amount; and

a momentary NOx absorption amount correcting section for correcting the momentary amount estimated by said momentary NOx absorption amount estimation section to

a value smaller in adverse proportion to the increase in the integrated amount estimated by said integrated NOx absorption amount estimation section.

2. The apparatus according to Claim 1, further comprising a NOx passing-through amount setting section for setting the amount of a NOx component passing through without being absorbed in the catalyst, wherein

said NOx emitting section lets said catalyst to emit the NOx component also when a passing-through amount set by the setting section is equal to or greater than a predetermined amount.

3. The apparatus according to Claim 1, further comprising:

a momentary NOx supply amount setting section for setting a momentary amount of the NOx component supplied on the basis of a unit time to the catalyst; and

a momentary NOx absorbable amount setting section for setting a momentary amount of the NOx component that can be absorbed in the catalyst on the basis of a unit time, wherein

said momentary NOx absorption amount estimation section determines smaller one of the values of the momentary amounts, which have been set by said setting section, to be a momentary NOx absorption amount.

4. The apparatus according to Claim 2, further

comprising:

a momentary NOx supply amount setting section for setting a momentary amount of the NOx component supplied on the basis of a unit time to the catalyst; and

a momentary NOx absorbable amount setting section for setting a momentary amount of the NOx component that can be absorbed in the catalyst on the basis of a unit time, wherein

said momentary NOx absorption amount estimation section determines smaller one of the values of the momentary amounts, which have been set by said setting section, to be a momentary NOx absorption amount.

5. The apparatus according to Claim 3, further comprising:

a momentary NOx initial exhaustion amount setting section for setting a momentary amount of the NOx component exhausted on the basis of a unit time from a combustion chamber; and

a momentary NOx purification amount setting section for setting a momentary amount of the NOx component that is reductively purified by the catalyst on the basis of a unit time, wherein

said momentary NOx supply amount setting section determines a value, which is obtained through subtraction of a momentary NOx purification amount set by said

purification amount setting section from a momentary NOx initial exhaust amount set by said exhaust amount setting section, to be a momentary NOx supply amount.

6. The apparatus according to Claim 4, further comprising:

a momentary NOx initial exhaustion amount setting section for setting a momentary amount of the NOx component exhausted on the basis of a unit time from a combustion chamber; and

a momentary NOx purification amount setting section for setting a momentary amount of the NOx component that is reductively purified by the catalyst on the basis of a unit time, wherein

said momentary NOx supply amount setting section determines a value, which is obtained through subtraction of a momentary NOx purification amount set by said purification amount setting section from a momentary NOx initial exhaust amount set by said exhaust amount setting section, to be a momentary NOx supply amount.

7. The apparatus according to Claim 3, further comprising an exhaust gas temperature detection section for detecting an exhaust gas temperature, wherein said momentary NOx absorbable amount setting section sets the momentary NOx absorbable amount according to at least one of the exhaust gas temperature detected by the detection

section and the momentary NOx supply amount set by said momentary NOx supply amount setting section.

8. The apparatus according to Claim 4, further comprising an exhaust gas temperature detection section for detecting an exhaust gas temperature, wherein said momentary NOx absorbable amount setting section sets the momentary NOx absorbable amount according to at least one of the exhaust gas temperature detected by the detection section and the momentary NOx supply amount set by said momentary NOx supply amount setting section.

9. The apparatus according to Claim 5, further comprising an exhaust gas temperature detection section for detecting an exhaust gas temperature, wherein said momentary NOx absorbable amount setting section sets the momentary NOx absorbable amount according to at least one of the exhaust gas temperature detected by the detection section and the momentary NOx supply amount set by said momentary NOx supply amount setting section.

10. The apparatus according to Claim 6, further comprising an exhaust gas temperature detection section for detecting an exhaust gas temperature, wherein said momentary NOx absorbable amount setting section sets the momentary NOx absorbable amount according to at least one of the exhaust gas temperature detected by the detection section and the momentary NOx supply amount set by said

momentary NOx supply amount setting section.